

BIOLOGICAL SYSTEMS ENGINEERING CURRICULUM

ECOLOGICAL ENGINEERING OPTION

A total of 127 credits required for graduation
(2024-2025 Catalog)

- I. Communications (10 credits)**
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|-------|--------------------------|---|
| 3 cr. | ENGL 1500 (FSSS) | Critical Thinking and Communication |
| 3 cr. | ENGL 2500 (FSSS) | Written, Oral, Visual, and Electronic Composition |
| 3 cr. | Comm. Elective | Select one of the courses below: |
| | <i>ENGL 3090 (FS)</i> | <i>Proposal and Report Writing</i> |
| | <i>ENGL 3140 (FSSS)</i> | <i>Technical Communication</i> |
| | <i>MKT 4500 (FS)</i> | <i>Advanced Professional Selling</i> |
| | <i>SP CM 2120 (FSSS)</i> | <i>Fundamentals of Public Speaking</i> |
| | <i>SP CM 3120 (FS)</i> | <i>Business and Professional Speaking</i> |
| | <i>AG EDS 3110 (FS)</i> | <i>Presentation and Sales Strategies for Ag Audiences</i> |
| 1 cr. | LIB 1600 (FSSS) | Introduction to College Level Research |
- II. Mathematical Sciences (15 credits)**
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| 4 cr. | MATH 1650 (FSSS) | Calculus I |
| 4 cr. | MATH 1660 (FSSS) | Calculus II |
| 4 cr. | MATH 2670 (FSSS) | Elementary Differential Equations and Laplace Transforms |
| 3 cr. | STAT 3050 (FSSS) | Engineering Statistics |
- III. Biological, Chemical and Physical Science Common Core (25 credits)**
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|-------|-----------------------------------|---|
| 3 cr. | BIOL 2120 (FSSS) | Principles of Biology II |
| 4 cr. | CHEM 1670 (FS) | General Chemistry for Engineering Students |
| | or CHEM 1770 <u>and</u> 1780 (FS) | General Chemistry I and II |
| 1 cr. | CHEM 1670L (FS) | Laboratory in General Chemistry for Engineers |
| | or CHEM 1770L (FS) | Laboratory in General Chemistry I |
| 2 cr. | CHEM 2110 (FS) | Quantitative & Environmental Analysis |
| 2 cr. | CHEM 2110L (FS) | Quantitative & Environmental Analysis Lab |
| 3 cr. | CHEM 2310 (FSSS) | Elementary Organic Chemistry |
| 1 cr. | CHEM 2310L (FSSS) | Elementary Organic Chemistry Lab |
| 3 cr. | MICRO 3020 (FSSS) | Biology of Microorganisms |
| 1 cr. | MICRO 3020L (FS) | Microbiology Laboratory |
| 4 cr. | PHYS 2310 (FSSS) | Introduction to Classical Physics I |
| 1 cr. | PHYS 2310L (FS) | Introduction to Classical Physics I Lab |
- IV. Social Sciences and Humanities (12 credits)**
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| 3 cr. | U. S. Cultures & Communities Course |
| 3 cr. | International Perspective Course |
| 6 cr. | Social Science and Humanities Electives (Select from departmental approved list). |
- V. Engineering Core (23 credits)**
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| R cr. | ENGR 1010 (FS) | Engineering Orientation |
| 1 cr. | A B E 1100 (S) | Experiencing Agricultural and Biosystems Engineering |
| 3 cr. | A B E 1600 (S) | Engineering Problems with Computer Applications Laboratory |
| 3 cr. | A B E 1700 (FS) | Engineering Graphics and Introductory Design |
| 3 cr. | A B E 3780 (FS) | Mechanics of Fluids |
| 3 cr. | C E 2740 (FSSS) | Statics of Engineering |
| 3 cr. | E M 3240 (FSSS) | Mechanics of Materials |
| 3 cr. | I E 3050 (FSSS) | Engineering Economic Analysis |
| 1 cr. | Lab Elective | Select one of the courses below: |
| | <i>ABE 3780L (FS) preferred</i> | <i>Mechanics of Fluids Laboratory</i> |
| | <i>E M 3270 (FS)</i> | <i>Mechanics of Materials Laboratory</i> |
| 3 cr. | M E 2310 (FSSS) | Engineering Thermodynamics I |

VI. Biological Systems Engineering Core (27 credits)

1 cr.	A B E 2010 (FS)	Preparing for Workplace Seminar
3 cr.	A B E 2160 (F)	Fundamentals of Agricultural and Biosystems Engineering
2 cr.	A B E 2180 (S)	Project Management & Design in Agricultural and Biosystems Engr
1 cr.	A B E 2730 (FS)	CAD for Process Facilities and Land Use Planning
3 cr.	A B E 3160 (FS)	Applied Numerical Methods for Agricultural and Biosystems Engr
4 cr.	A B E 3630 (FS)	Agri-Industrial Applications of Electric Power and Electronics
3 cr.	A B E 3800 (S)	Principles of Biological Systems Engineering
3 cr.	A B E 4040 (F)	Instrumentation for Agricultural and Biosystems Engineering
2 cr.	A B E 4150 (FS)	Agricultural and Biosystems Engineering Design I
2 cr.	A B E 4160 (FS)	Agricultural and Biosystems Engineering Design II
3 cr.	A B E 4800 (F)	Engineering Analysis of Biological Systems

VII. Ecological Engineering Option (15 credits)

3 cr.	C E 3720 (FS)	Engineering Hydrology and Hydraulics
3 cr.	A B E 4310 (F)	Design and Evaluation of Soil & Water Conservation Systems
3 cr.	A B E 4340 (S)	Ecosystem Restoration Engineering
6 cr.	Ecological Elective I & II	Select one of the courses below
	<i>A B E 3340</i>	<i>Principles of Ecological Engineering</i>
	<i>A ECL 4180 (odd F)</i>	<i>Stream Ecology</i>
	<i>C E 3260 (FS)</i>	<i>Principles of Environmental Engineering</i>
	<i>C R P 2510 (F)</i>	<i>Fundamentals of Geographic Information System</i>
	<i>ENSCI 2700 (F)</i>	<i>Geospatial Technologies</i>
	<i>ENSCI 4610I (4cr) (SS)</i>	<i>Introduction to GIS</i>
	<i>GEOL 4520 (FS)</i>	<i>GIS for Geoscientists</i>
	<i>NREM 3450 (S)</i>	<i>Natural Resource Photogrammetry and Geographic Info Syst.</i>
	<i>NREM 4460 (F)</i>	<i>Integrating GPS & GIS for Natural Resources Management</i>
	<i>NREM 4660 (odd S)</i>	<i>Ecosystem Services</i>
	<i>NREM 4890 (F)</i>	<i>Survey of Remote Sensing Technologies</i>

**Please check the current catalog and Schedule of Classes for most recent offerings*